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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/735,086	12/12/2003	Mohit Kalra	JP920030094US1	1591

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EXAMINER	
KANG, INSUN	
ART UNIT	**PAPER NUMBER**
2193	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/735,086	KALRA, MOHIT	
	Examiner	Art Unit	
	Insun Kang	2193	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 December 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 December 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This action is responding to application papers filed on 12/12/2003.

2. Claims 1-16 are pending in the application.

Specification

3. The disclosure is objected to because of the following informalities: there appears to be a minor error in page 3, line 31: "sae" in "the sae of variables" needs to be corrected to "state."

Appropriate correction is required.

Drawings

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: "470" in page 13. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 13 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Per claim 13:

It is unclear to which destination address it is referring. Interpretation: the destination address.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 1-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hawley et al. (US Patent 5,533,192) hereafter Hawley in view of Stallman et al. ("Debugging with GDB," Free Software Foundation, 2/1999) hereafter Stallman.

Per claim 1:

Hawley discloses:

- initiating execution of the computer program (i.e. "Program execution then proceeds ... until another branch or interrupt is encountered," col. 1 lines 30-35)
- interrupting execution of the computer program at an origin address where the

breakpoint is detected (i.e. "the debugger core unit 103 will plant any requested breakpoints and exit from the interrupt routine (event 5)," col. 10 lines 58-65; col. 8 lines 38-45; col. 12 lines 37-67).

Hawley discloses continuing execution and determining the memory location of the instruction immediately subsequent to the next instruction to be executed (i.e. DebuggerCoreEntry routine (step 733) with a next action parameter indicating the "continue" function. If it is assumed ... address "A" does not change the flow of control, then the following instruction should begin at location A+4," col. 17 lines 8-13 and 29-41).

Hawley does not explicitly teach changing the execution flow by changing the instruction pointer to point to a destination address specified by the breakpoint and continuing execution of the computer program from the destination address. However, Stallman teaches continuing at a different address by using a command such as jump, set etc was known in the pertinent art, at the time applicant's invention was made, to "continue at an address of your own choosing (i.e. section 11.2, Continuing at a different address, which shows the jump instructions and set $pc that alter the instruction pointer to a different address). It would have been obvious for one having ordinary skill in the art to modify Hawley's disclosed system to incorporate the teachings of Stallman. The modification would be obvious because one having ordinary skill in the art would be motivated to continue execution at a different address, if desired, rather than at the address where the program stopped by using a debugger command such as jump or set $pc as suggested by Stallman (i.e. continuing at a different address...set $pc = 0x485 makes the next continue command or stepping command execute at address 0x485, rather than at the address

where your program stopped," section 11.2 Continuing at a different address).

Per claim 2:

Hawley further discloses:

- storing an original instruction from the origin address (i.e. "debugger...retrieve ...an original instruction," col. 4 lines 65-67; col. 5 lines 1-5).

Per claim 3:

Hawley further discloses:

- replacing the original instruction at the origin address with a break instruction (i.e. "setting breakpoints at particular locations within the program," col. 2 lines 40-47; "removing a breakpoint and substituting therefor the original data is called "pulling" the breakpoint (i.e. col. 12 lines 40-50)," where the original data was replaced with the break instruction before).

Per claim 4:

Hawley further discloses:

- restoring the stored original instruction at the origin address after the step of interrupting execution of the computer program and before the step of changing the instruction pointer (i.e. "ensuring that the original child instruction...that was replaced by the signal instruction...gets executed," col. 5 lines 1-13, which the

original instruction must be restored for execution after the interrupt and before any continuing execution).

Per claim 5:

Hawley further discloses:

- repeating the step of replacing the original instruction at the origin address with the break instruction, after the step of changing the instruction pointer (i.e. col. 17 lines 8-13 and 29-41, after jumping to a different address, the steps of replacing, restoring etc are the same at that address for the debugging).

Per claim 6:

Hawley further discloses:

- execution of the computer program continues in a single-stepping mode before the step of changing the instruction pointer (i.e. "setting a single step breakpoint at that location," col. 11 lines 1-15).

Per claim 7:

Hawley further discloses:

- adding the breakpoint address to a debugging register (i.e. "setting breakpoints at particular locations within the program," col. 2 lines 40-47).

Per claim 8:

Hawley further discloses:

- removing the breakpoint address from a debugging register (i.e. removing any breakpoints," col. 12 lines 40-45).

Per claim 9:

Hawley further discloses:

- clearing the breakpoint from the computer program (i.e. "removing a breakpoint and substituting therefor the original data is called "pulling" the breakpoint," col. 12 lines 40-50).

Per claim 10:

Hawley further discloses:

- wherein the breakpoint further specifies the origin address (i.e. "setting breakpoints at particular locations within the program," col. 2 lines 40-47; "debuggerCoreState... includes other data owned by the debugger 201, such as the address of its entry point," col. 9 lines 60-67).

Per claim 11:

Hawley further discloses:

- wherein the breakpoint further specifies the memory address that stores the original instruction (i.e. "substituting therefor the original data is called "pulling" the breakpoint," col. 12 lines 40-50, which the breakpoint specifies the address of the corresponding original data stored by a debugger for substituting).

Per claim 12:

Hawley further discloses:

- loading the computer program as a child process of a debugger application (i.e. "a parent process a means for controlling the execution of a child process...In this instance, the parent process is a debugger program, and the child process is the program being debugged," col. 4 lines 57-67).

Per claim 13:

Hawley further discloses:

- determining whether the breakpoint specifies a destination address that diverts execution flow of the computer program (i.e. col. 17 lines 8-13 and 29-41, which the debugger determines if the next location address changes the flow of control by looking at the command. If it's a jump, for example, the next instruction should begin at an arbitrary location in the program, not the next subsequent address).

Per claim 14:

Stallman further discloses:

- wherein the destination address specified by the breakpoint is provided from user input (i.e. see section 11.2 continuing at a different address, which shows the user input commands such as jump linespec, jump *address, and set $pc = 0x485 to resume execution at a specific linespec or address).

Per claim 15, it is the product version of claim 1, respectively, and is rejected for the same reasons set forth in connection with the rejection of claim 1 above.

Per claim 16, it is the system version of claim 1, respectively, and is rejected for the same reasons set forth in connection with the rejection of claim 1 above.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Insun Kang whose telephone number is 571-272-3724. The examiner can normally be reached on M-R 6:30-5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MENG AI AN can be reached on 571-272-3756. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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